

INSTITUTE OF OCEANOLOGY



BALTIC SEA

**SANDY BEACHES:
Hidden but
important**



OCEANIA



RIVERS



Lech Kotwicki (me)

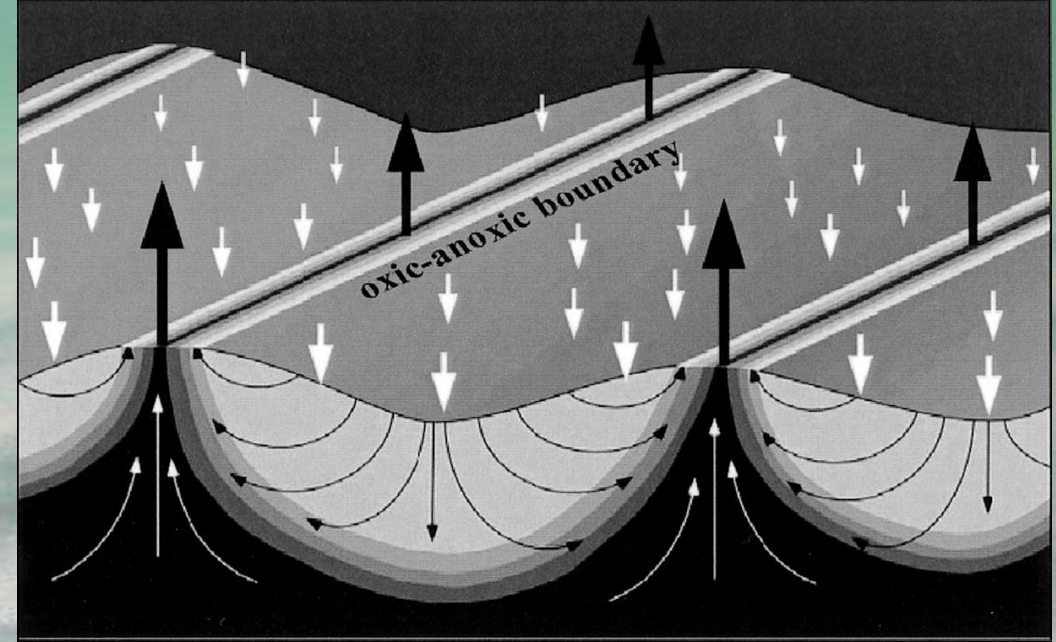
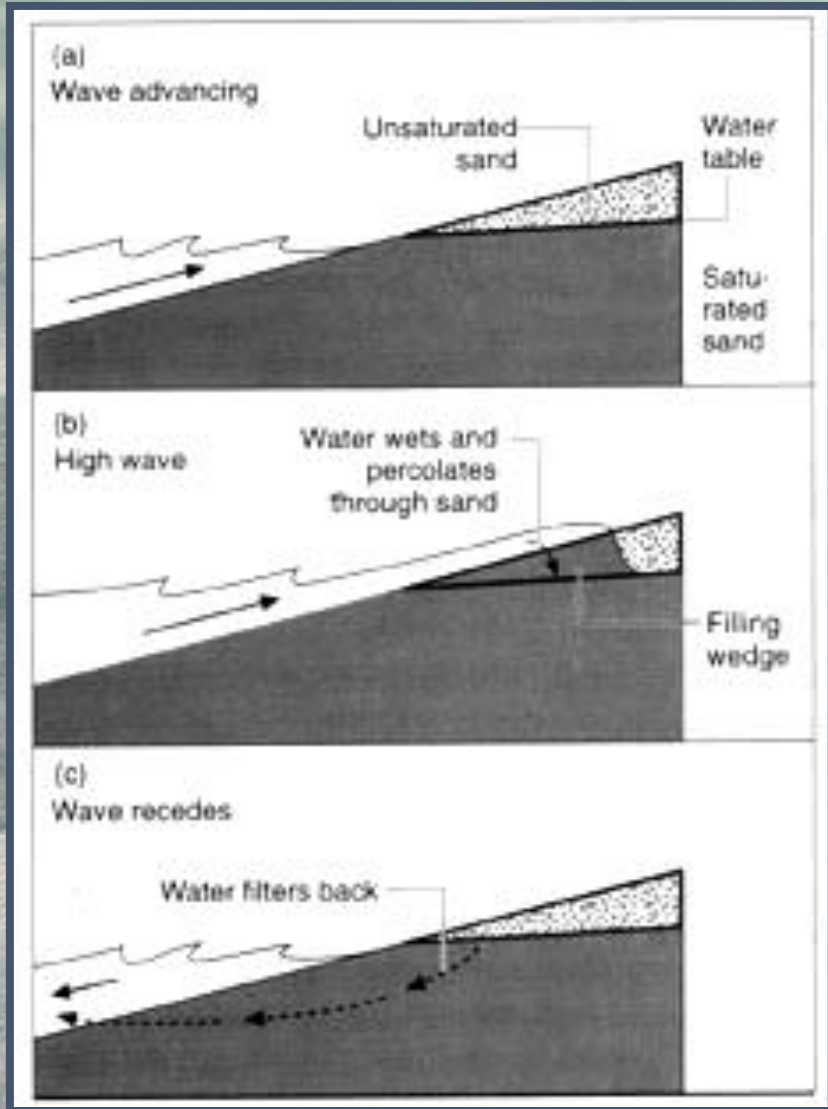


ARCTIC

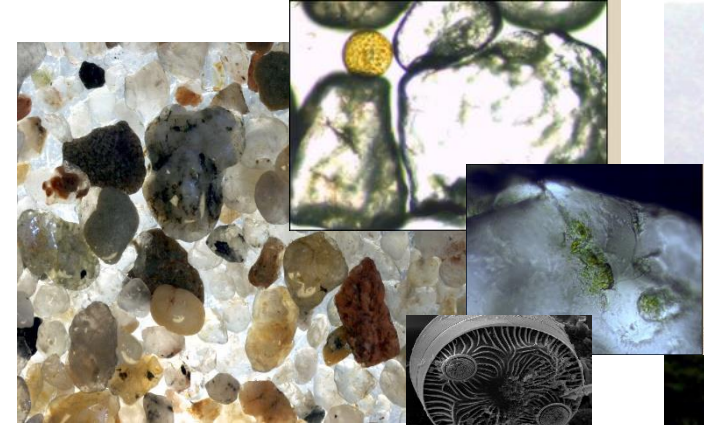


COSA project"

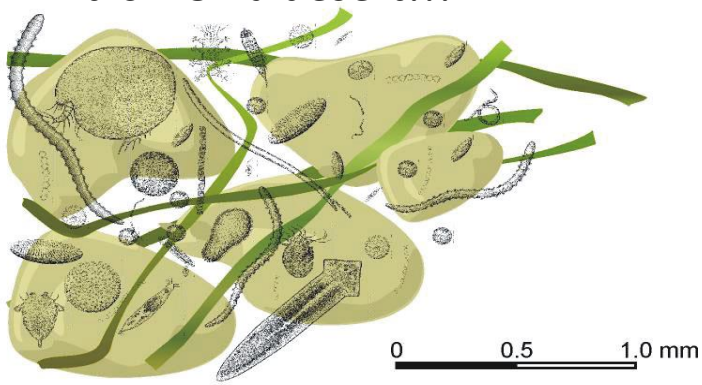
"Coastal Sands as Biocatalytical Filters"



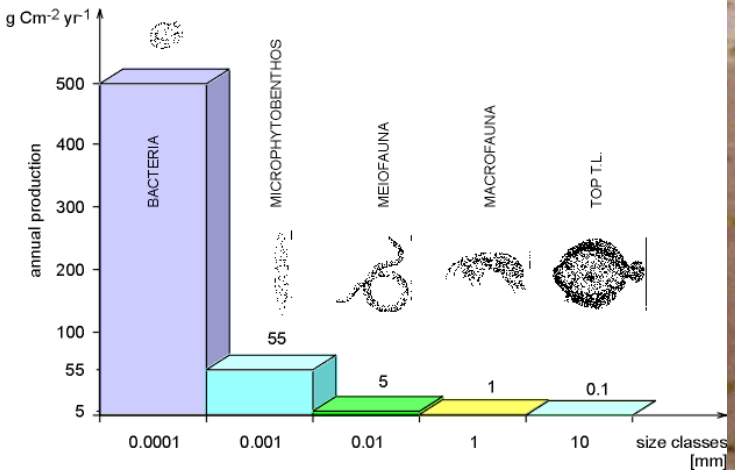
Coastal sands effectively capture organic pollutants



It is NOT a desert!!!

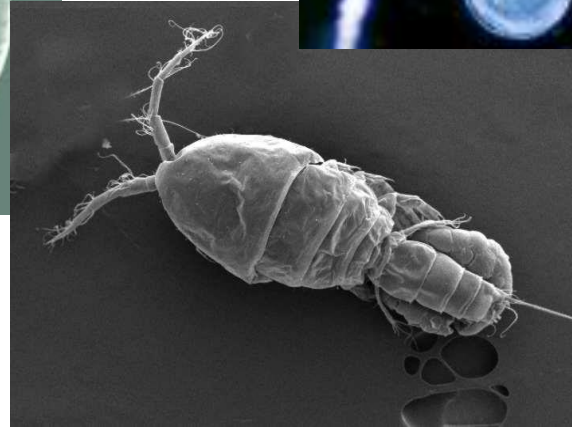
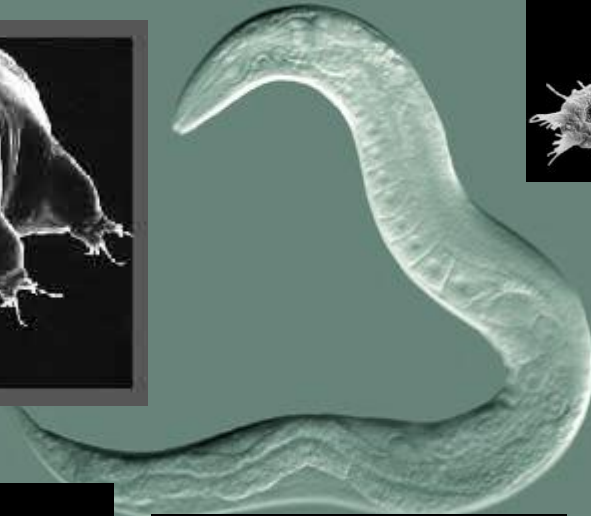
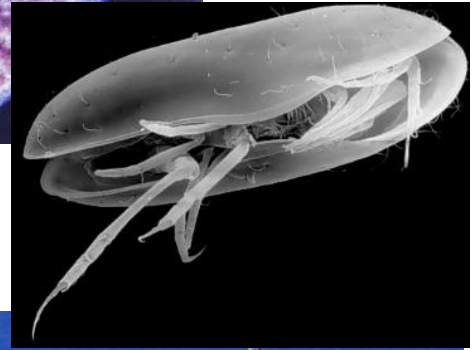


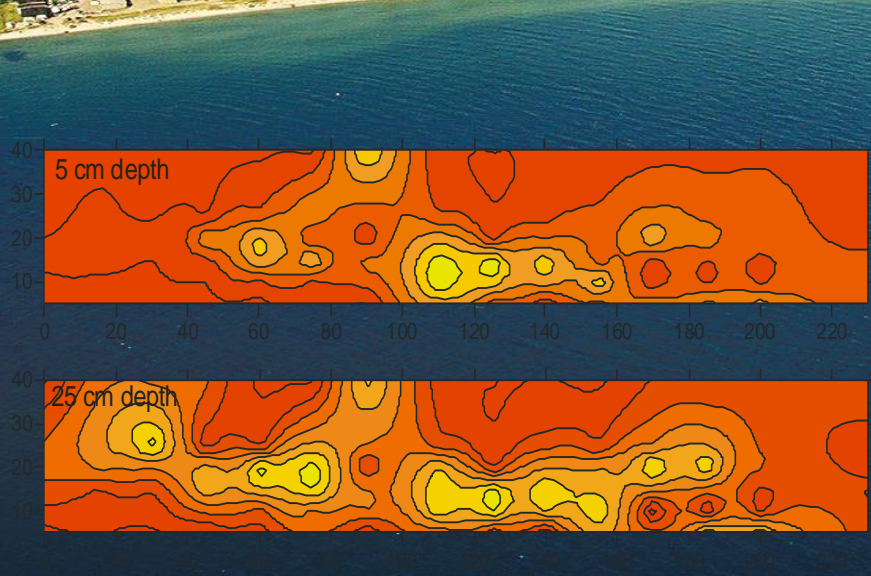
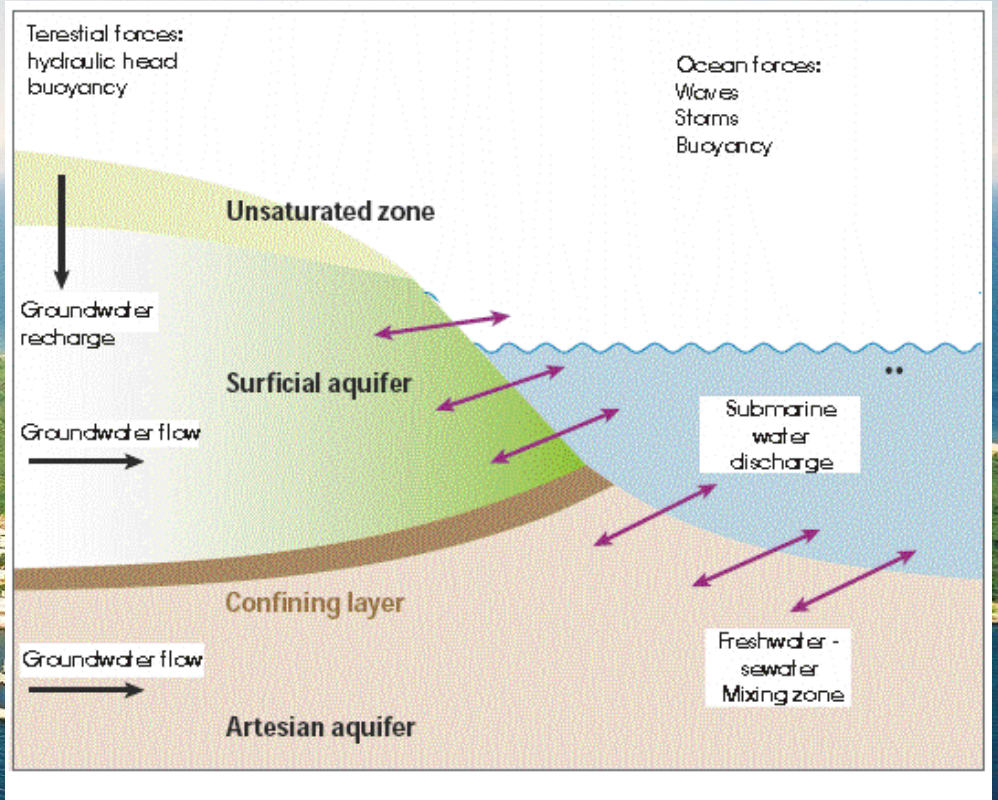
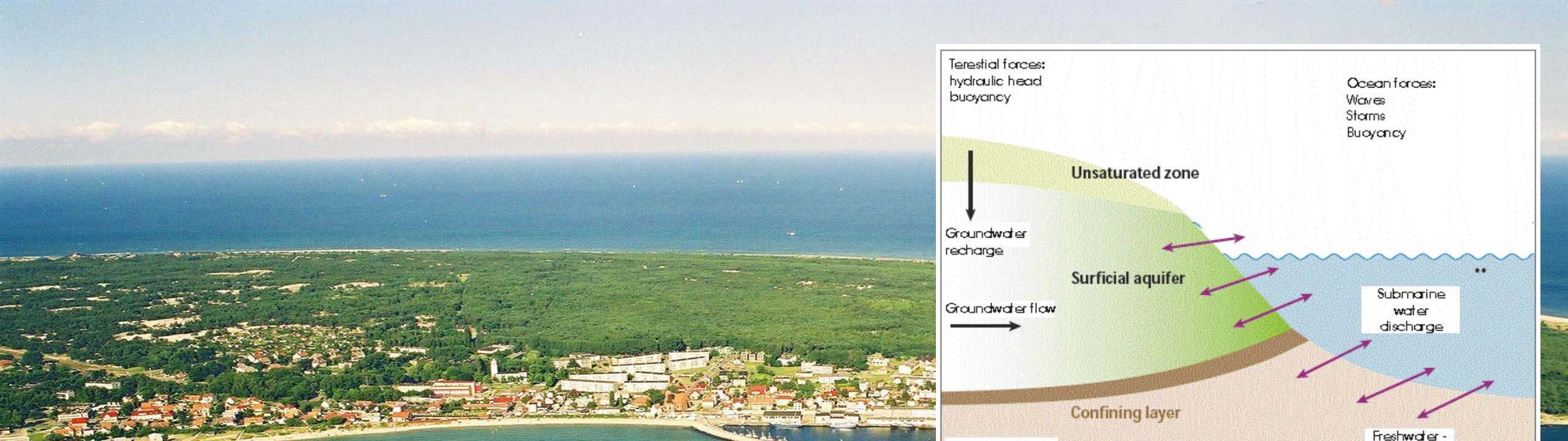
THE SHARE OF DIFFERENT SIZE CLASSES IN SANDY LITTORAL PRODUCTION, BALTIC BEACH, SOPOT



Natural biological wastewater treatment plant

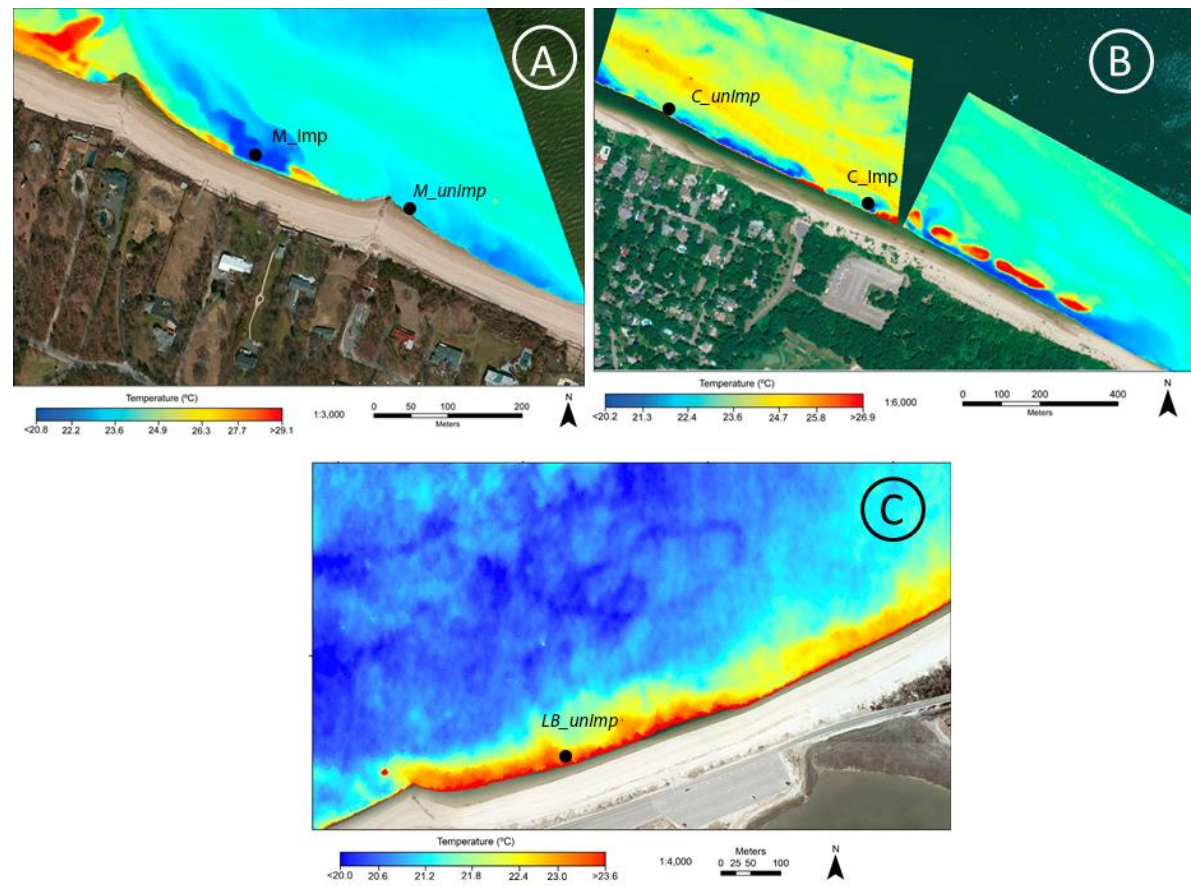
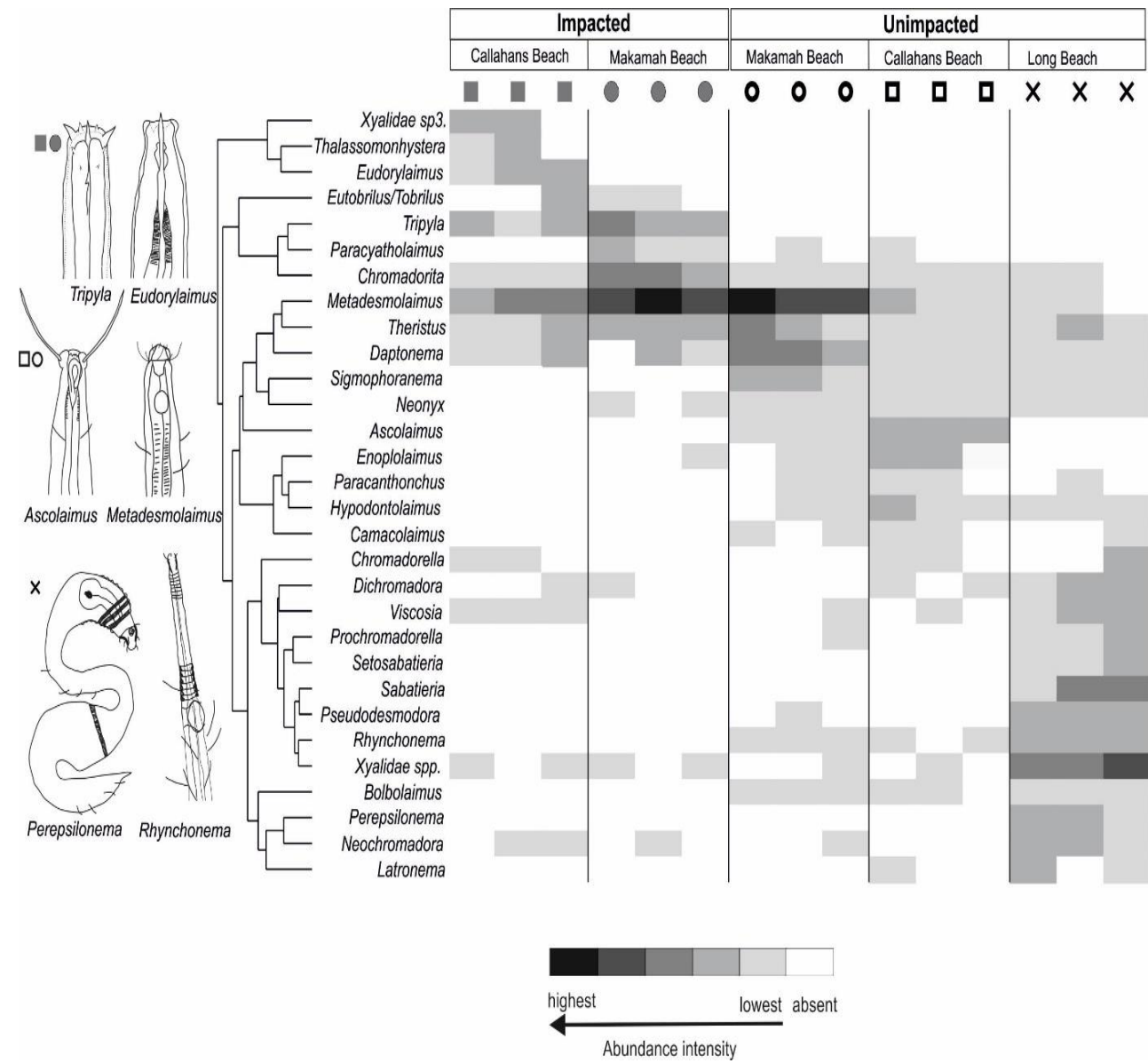
MEIOFAUNA





AMBER project

Groundwater seepage at Hel Peninsula Impact on biota



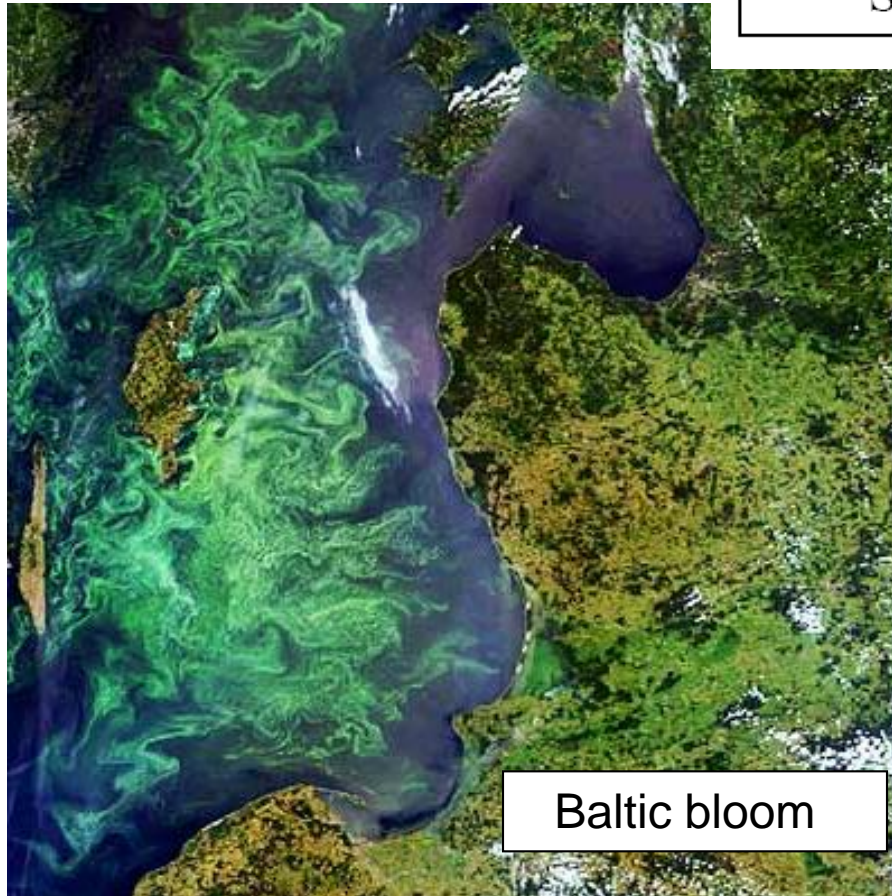
The cooler temperature colours along the shoreline are indicators of fresh SGD.

Patterns of Nematoda genera abundance and the shift in their occurrence across the stations were pronounced, with notable distinctions between impacted and non-impacted SGD sites



NUTRIENT FLUXES

Fluxes to Puck Bay	DIP [t/year]	DIN [t/year]
Atmosphere	18	485
Rivers and collectors	70	220
SGD	56	50



Baltic bloom

(<http://www.esa.int/earthimages>)



photo: Stanisław Węsławski

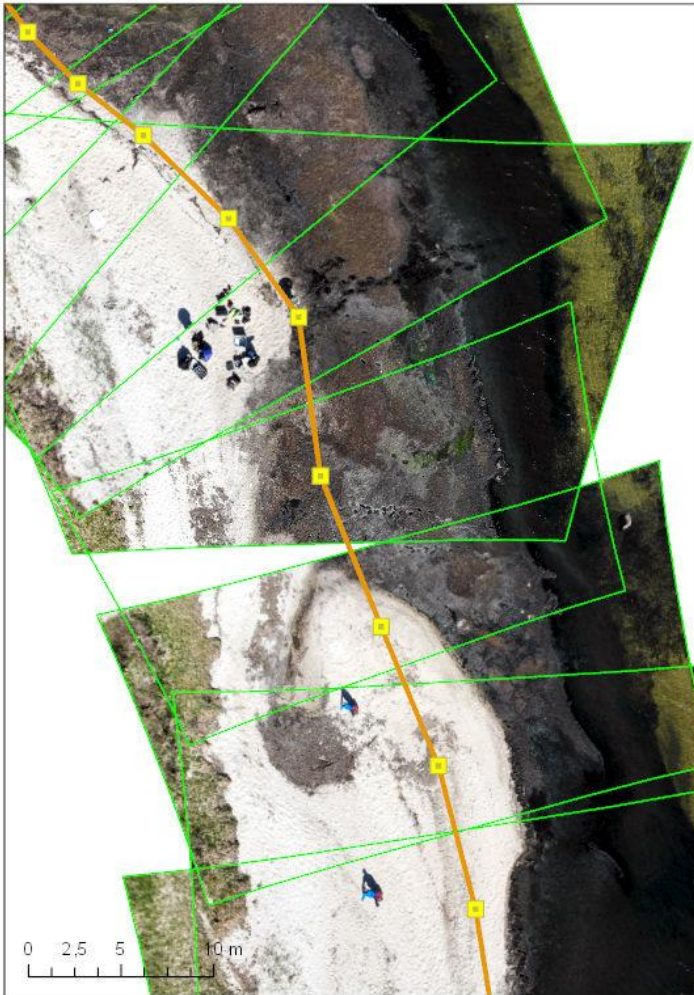
What is beach wrack?

- **Beach cast** = mixture of all kinds of material washed up on the beach, generally be found in the swash zone, in lines along the foreshore, sometimes at the back (after storms)
- often consisting of diverse biogenic material: seaweed/macroalgae, seagrass/eelgrass, shells, crustaceans, driftwood, dead animals, but also litter...
- **Beach wrack** = all organic/biogenic material
- amounts vary depending on weather conditions, currents, location (near-shore vegetation)

CONTRA project
Conversion of a Nuisance to
a Resource and Asset

to find a balance...





Beach cleaning = removal of pollutants & nutrients out of the Baltic Sea system

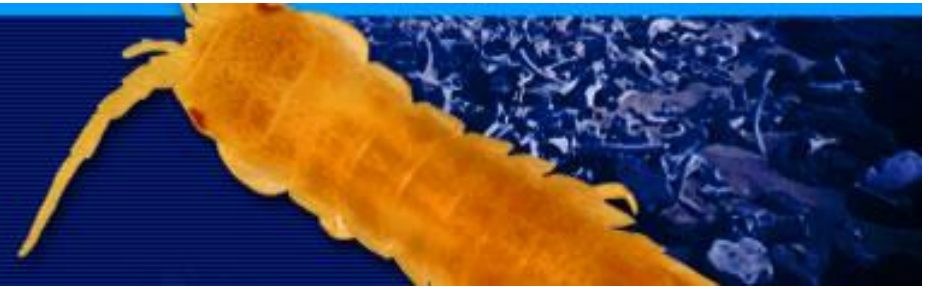


A sustainable and site-specific approach to the problem as the only reasonable solution from both an ecological and a beach management perspective.



LITUS

means "the beach" in Latin



WE'RE STILL LOOKING FOR A COMPROMISE



Some plastic/litter projects: ADAMANT, DIANA





Nurdles are small plastic pellets about the size of a lentil. Countless billion are used each year to make nearly all our plastic products but many end up washing up on our shores.



Nurdles attract and concentrate background pollutants like DDT and PCBs to highly toxic levels.

THANK YOU
"Slava Ukraini!"

Like other plastics nurdles are mistaken for prey by many marine animals and seabirds and enter the food chain.

